

WHAT IS CLAIMED IS:

1. An image capturing apparatus for capturing a plurality of images with different amounts of exposure to compose said images into a single composite image, said image capturing apparatus comprising:

misregistration amount detecting means for detecting the amounts of misregistration of respective images except for a reference image, said reference image selected from said plurality of images, with respect to said reference image;

misregistration correcting means for correcting the misregistration of the respective images except for said reference image with respect to said reference image based on said misregistration amounts; and

image composing means for composing said reference image and all of the respective misregistration corrected images except for said reference images.

2. The image capturing apparatus according to claim 1, wherein said misregistration amount detecting means comprises:

feature point extracting means for extracting feature points from said reference image and the respective images except for said reference image, respectively;

confidence level calculating means for calculating a confidence level for each of the images except for said reference image as said misregistration amount for each of a

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plurality of previously provided misregistration amount candidates, based on a positional relationship of the feature points in said reference image and the feature points in the respective images except for said reference image; and

maximum value detecting means for detecting said misregistration amount candidate which presents a maximum confidence level within said misregistration amount candidates as said misregistration amount in each of the images except for said reference image.

3. The image capturing apparatus according to claim 2, wherein said confidence level calculating means corrects misregistration between a feature point in said reference image and a feature point in an image except for said reference image using said misregistration amount candidate, and counts the number of positions of said feature points which correspond to each other to calculate said confidence level, thereby calculating said confidence level in each of said plurality of misregistration amount candidates.

4. The image capturing apparatus according to claim 2, wherein said feature point extracting means extracts plural types of feature points from said reference image and each of the images except for said reference image; and
said confidence level calculating means calculates the

confidence level for each of the images except for said reference image as said misregistration amount for each of said plurality of previously provided misregistration amount candidates based on a positional relationship of said plural types of feature points extracted from said reference image and said plural types of feature points extracted from each of the images except for said reference image.

5. The image device according to claim 2, wherein said feature point is a pixel which forms an edge at which a pixel value presents an abrupt change.

6. The image capturing apparatus according to claim 2 comprising:

integrating means for integrating pixel values for each pixel train in the horizontal direction to produce a data array in the vertical direction, and for integrating pixel values for each pixel train in the vertical direction to produce a data array in the horizontal direction, for each of said plurality of images, wherein said feature point extracting means extracts feature points in said reference image and feature points in each of the images except for said reference image based on the respective data arrays in the vertical and horizontal directions.

7. The image capturing apparatus according to claim 2, wherein

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said feature point extracting means extracts feature points in said reference image and feature points in each of the images except for said reference image based on luminance information included in said plurality of images.

8. An imaging method for capturing a plurality of images with different amounts of exposure to compose said images into a single composite image, said imaging method comprising the steps of:

detecting the amounts of misregistration of respective images except for a reference image, said reference image selected from said plurality of images, with respect to said reference image;

correcting the misregistration of the respective images except for said reference image with respect to said reference image based on said misregistration amounts; and

composing said reference image and all of the respective misregistration corrected images except for said reference images.

9. The imaging method according to claim 8, comprising the steps of:

extracting feature points from said reference image and the respective images except for said reference image, respectively;

calculating a confidence level for each of the images except for said reference image as said misregistration amount for each of a plurality of previously provided misregistration amount candidates, based on a positional relationship of the feature

points in said reference image and the feature points in the respective images except for said reference image; and

detecting said misregistration amount candidate which presents a maximum confidence level within said misregistration amount candidates as said misregistration amount in each of the images except for said reference image.

10. The imaging method according to claim 9, wherein misregistration between a feature point in said reference image and a feature point in an image except for said reference image is corrected by using said misregistration amount candidate, and the number of positions of said feature points which correspond to each other is counted to calculate said confidence level, thereby said confidence level in each of said plurality of misregistration amount candidates is calculated.

11. The imaging method according to claim 9, comprising the steps of:

extracting plural types of feature points from said reference image and each of the images except for said reference image; and calculating the confidence level for each of the images except for said reference image as said misregistration amount for each of said plurality of previously provided misregistration amount candidates based on a positional relationship of said plural types of feature points extracted from said reference image

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and said plural types of feature points extracted from each of the images except for said reference image.

12. The imaging method according to claim 9, wherein said feature point is a pixel which forms an edge at which a pixel value presents an abrupt change.

13. The imaging method according to claim 9, comprising the steps of:

integrating pixel values for each pixel train in the horizontal direction to produce a data array in the vertical direction, and integrating pixel values for each pixel train in the vertical direction to produce a data array in the horizontal direction, for each of said plurality of images; and

extracting feature points in said reference image and feature points in each of the images except for said reference image based on the respective data arrays in the vertical and horizontal directions.

14. The imaging method according to claim 9, comprising the step of:

extracting feature points in said reference image and feature points in each of the images except for said reference image based on luminance information included in said plurality of images.